Claims

What is claimed is:

1. An apparatus for use in interfacing a local network to one or more external network elements, the apparatus comprising:

a gateway coupled between the local network and the one or more external network elements, the gateway being operative to determine remotely-assigned address information for a given device attached to the local network, and to establish based at least in part on the remotely-assigned address information a substitution address for use by at least one other device attached the local network when communicating with the given device.

10

2. The apparatus of claim 1 wherein the remotely-assigned address information comprises an Internet protocol (IP) address assigned to the at least one device by an external network element.

3. The apparatus of claim 1 wherein the local network comprises a local area network (LAN).

15

4. The apparatus of claim 1 wherein the gateway comprises an ADSL (asymmetric digital subscriber loop) termination unit-receive (ATU-R) device.

20

5. The apparatus of claim 1 wherein the gateway stores remotely-assigned address information for each of a plurality of devices attached to the local network.

6. The apparatus of claim 5 wherein the gateway stores a set of address substitution information for each of the plurality of devices, the set of address substitution information for a given one of the devices comprising an address to be used by the given device in communicating with the gateway, and addresses to be used by the given device in communicating with each of the other devices.

25

7. The apparatus of claim 6 wherein the stored information comprises an address substitution matrix having a row of address information for each of the plurality of devices attached to the local network.

8. The apparatus of claim 5 wherein a given one of the sets of address substitution information for a particular one of the plurality of devices comprises a set of IP addresses, each of which is sub-network compatible with an IP address remotely assigned to the corresponding device, such that communications between the given device and another one of the devices attached to the local network are not routed through an external network element.

9. The apparatus of claim 1 wherein the gateway processes a particular received packet in order to replace remotely-assigned address information in a header thereof with a corresponding substitution address determined by the gateway.

10. The apparatus of claim 1 wherein the gateway intercepts at least one of control information and maintenance information received over the local network and associated with the given device so as to perform related services on behalf of the given device.

11. A method for use in interfacing a local network to one or more external network elements, the method comprising the steps of:

determining, in a gateway coupled between the local network and the one or more external network elements, remotely-assigned address information for a given device attached to the local network; and

establishing a substitution address for use by at least one other device attached the local network when communicating with the given device, based at least in part on the remotely-assigned address information.

12. The method of claim 11 wherein the remotely-assigned address information comprises an Internet protocol (IP) address assigned to the at least one device by an external network element.

10

13. The method of claim 11 wherein the local network comprises a local area network (LAN).

14. The method of claim 11 wherein the gateway comprises an ADSL (asymmetric digital subscriber loop) termination unit-receive (ATU-R) device.

15. The method of claim 11 wherein the gateway stores remotely-assigned address information for each of a plurality of devices attached to the local network.

16. The method of claim 15 wherein the gateway stores a set of address substitution information for each of the plurality of devices, the set of address substitution information for a given one of the devices comprising an address to be used by the given device in communicating with the gateway, and addresses to be used by the given device in communicating with each of the other devices.

17. The method of claim 16 wherein the stored information comprises an address substitution matrix having a row of address information for each of the plurality of devices attached to the local network.

18. The method of claim 15 wherein a given one of the sets of address substitution information for a particular one of the plurality of devices comprises a set of IP addresses, each of which is sub-network compatible with an IP address remotely assigned to the corresponding device, such that communications between the given device and another one of the devices attached to the local network are not routed through an external network element.

19. The method of claim 11 wherein the gateway processes a particular received packet in order to replace remotely-assigned address information in a header thereof with a corresponding substitution address determined by the gateway.

20.   The method of claim 11 wherein the gateway intercepts at least one of control information and maintenance information received over the local network and associated with the given device so as to perform related services on behalf of the given device.

5

21.   A machine-readable medium storing one or more programs which when executed by a processor implement the steps of:

determining, in a gateway coupled between the local network and the one or more external network elements, remotely-assigned address information for a given device attached to the local network; and

10

establishing a substitution address for use by at least one other device attached the local network when communicating with the given device, based at least in part on the remotely-assigned address information.

12